

CLAIMS

What is claimed is

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1 1. An IEEE 802.11 compliant wireless local area network (WLAN)
2 multiprotocol device comprising:
3 one frequency band agile, complementary code keying (CCK) and orthogonal
4 frequency division multiplex (OFDM) modulation-capable radio;
5 a data flow structure framework which organizes and routes transmitted and
6 received data packets within the multiprotocol device; and
7 a medium access control (MAC) mechanism which wirelessly exchanges the
8 data packets between the multiprotocol device and other IEEE 802.11 compliant
9 devices,
10 wherein the device is capable of engaging in simultaneous distinct channel
11 IEEE 802.11a, 802.11b and 802.11g communications.

1 2. The multiprotocol device of Claim 1 wherein:
2 the data flow structure comprises one wired portal and two or more wireless
3 portals, each portal consisting of a transmit queue and an associated receive buffer;
4 and interconnections between distinct pairs of wired and wireless portal receive
5 buffers and transmit queues such that any data packet externally deposited at any
6 one portal receive buffer is internally routed to one appropriate other portal transmit
7 queue, and
8 the MAC mechanism provides for distinct, sequential time intervals assigned
9 to each wireless portal, only during which data packets can be transmitted from or
10 received by said wireless portal, and where each time interval includes a beginning
11 and end indicated by specific, standard 802.11 MAC management or control data
12 packets.

1 3. The multiprotocol device of Claim 2, wherein
2 one wired portal and two wireless portals are used for internal datagram
3 routing, and
4 wherein all wireless communications conforming to the IEEE 802.11a
5 standard are routed through one wireless portal on one 5 GHz band RF channel,
6 and
7 wherein all wireless communications conforming to the IEEE 802.11b/g
8 standards are routed through the other wireless portal on one 2.4 GHz band RF
9 channel, and
10 wherein the multiprotocol device, referred to as a multiprotocol access point,
11 complies with all relevant IEEE 802.11 standards regarding access point devices.

1 4. The multiprotocol device of Claim 2 wherein the multiprotocol device is
2 configured to communicate wirelessly with an upstream multiprotocol device, and
3 wherein three wireless portals are used for internal datagram routing, and
4 wherein all wireless communications routed through the first of the three
5 wireless portals conform to a designated IEEE 802.11a or 802.11b/g standard and
6 occur on the same RF channel as that used by a wireless portal belonging to the
7 upstream multiprotocol device, and
8 wherein all wireless communications routed through the second of the three
9 wireless portals conform to the IEEE 802.11a standard and occur on a 5 GHz band
10 RF channel distinct from the channel used by the first wireless portal, and
11 wherein all wireless communications routed through the third of the three
12 wireless portals conform to the IEEE802.11b/g standard and occur on a 2.4 GHz
13 band RF channel distinct from the channel used by the first wireless portal, and
14 wherein the multiprotocol device, referred to as a multiprotocol repeater,
15 complies with all relevant IEEE 802.11 standards regarding access point devices.

1 5. A combination multiprotocol device comprising:
2 a first multiprotocol device of Claim 2 and
3 a second multiprotocol device of Claim 2, the second multiprotocol device
4 being different from the first multiprotocol device,
5 wherein one of the multiprotocol devices is configured to communicate
6 wirelessly with one separate upstream multiprotocol device and
7 wherein one of the multiprotocol devices uses one wired portal and one
8 wireless portal for internal datagram routing, and
9 wherein the other multiprotocol device uses one wired portal and two wireless
10 portals for internal datagram routing, and
11 wherein the multiprotocol devices are externally interconnected at their wired
12 portals, and
13 wherein all wireless communications routed through one of the combination
14 multiprotocol device's wireless portals conform to one designated IEEE 802.11a or
15 802.11b/g standard and occur within the same RF channel as that used by a
16 wireless portal belonging to the upstream multiprotocol device, and
17 wherein all wireless communications routed through another of the
18 combination multiprotocol device's wireless portals conform to the IEEE 802.11a
19 standard and occur within a 5 GHz band RF channel distinct from the channel used
20 by the first wireless portal, and
21 wherein all wireless communications routed through the remaining
22 combination multiprotocol device's wireless portals conform to the IEEE802.11b/g
23 standard and occur within one 2.4 GHz band RF channel distinct from the channel
24 used by the first wireless portal, and
25 wherein the combination multiprotocol device, referred to as a high capacity
26 multiprotocol repeater, complies with all relevant IEEE 802.11 standards regarding
27 access point devices.